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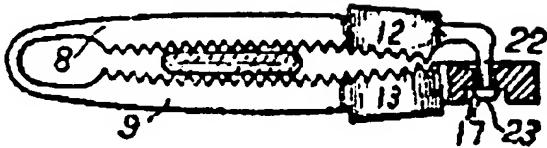
# Funis clamp

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**Publication date:** 1962-01-03  
**Inventor:**  
**Applicant:** DONALD HUNTER KARIHER;;  
THOMAS WILLIAMS SMITH  
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- **international:**  
- **european:** A61B17/122  
**Application number:** GB19590007914 19590306  
**Priority number(s):** USX886356 19580315

## Abstract of GB886356

886,356. Surgical clamps.  
KARIHER, D. H., and SMITH, T.  
W. March 6, 1959 [March 15,  
1958], No. 7914/59. Class 81 (2).  
[Also in Group XXV] A surgical  
clamp comprises a pair of  
synthetic plastic arms 8, 9 joined  
together at one end, the free end  
of one arm carrying an oval  
button 23 and the free end of the  
other arm having an oval  
aperture 17 of helical  
configuration for reception of the  
button, the longitudinal axis of  
the aperture at the entrance  
being angularly dis- posed to the  
longitudinal axis of the aperture  
at the exit. Each arm has a finger  
piece 12, 13 and teeth along its  
inner surface. The clamp is  
made of elastic material so that a  
lateral projection 22 which  
carries the button rotates to  
permit the button to pass through

FIG. 4.



the aperture.

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# PATENT SPECIFICATION



DRAWINGS ATTACHED

886356

Date of Application and filing Complete Specification:  
March 6, 1959. No. 7914/59.

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Complete Specification Published: Jan. 3, 1962.

Index at Acceptance:- Classes 81(2), YX6; and 44, BE4B6.

International Classification:- A61b. F06b.

## COMPLETE SPECIFICATION

### Funis Clamp

We, DONALD HUNTER KARIHER and THOMAS WILLIAMS SMITH both of 1577 South Avenue, Rochester, New York, United States of America and both citizens of the United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us and the method by which it is to be performed, to be particularly described in and by the following statement:-

This invention relates to clamping devices, and more particularly to devices of such type which may be used by the surgeon, as a funis clamp.

According to the invention a funis clamp for surgical use is constituted by a pair of arms joined together at one of their ends and fabricated of a synthetic plastic, an oval-shaped button carried by the free end of one arm of said member, the free end of the other arm of said member having an aperture of oval form extending therethrough in a helical configuration for the reception therein of said button, said aperture having an entrance in substantial registry with said button when the device is in an open position, the longitudinal axis of 30 the aperture at the entrance to said aperture being angularly disposed to the longitudinal axis of the aperture at the exit from said aperture.

One embodiment of the invention is 35 illustrated in the accompanying drawing, wherein:

Figure 1 is a side elevational view of a clamp of this invention.

Figure 2 is a top plan view of the 40 device.

Figure 3 is an end view of the device.

Figure 4 is an elevational view of the device shown in operative position securing therein material to be clamped 45 such as an umbilical cord.

[Price]

Figure 5 is an enlarged fragmentary plan view of the free end of one arm of the device.

Figure 6 is an enlarged fragmentary elevational view of the free end of the other arm of the device. 50

Figure 7 is a sectional view taken along lines 7 - 7 of figure 6.

The device constituting this invention comprises a pair of arms 8 and 9 secured together at their one end by a hinge portion 10 which is arcuately shaped in order to equalize the stress imparted thereto, the arms being

normally spaced apart at the free ends 60 and assuming a V-shape. The arms 8 and 9 are each provided with thumb depressor surfaces 12 and 13, respectively. The arms 8 and 9 are further provided with a plurality of teeth 14 and 15, 65 respectively, which are disposed so that the teeth 14 mesh with the teeth 15 when the two arms are pressed into contact along their length. The arm 9 has at its free end a flattened extension 16 having an oval shaped hole 17 extending therethrough in the form of a helical configuration. The hole 17 has, therefore, an entrance 18 having a longitudinal axis angularly disposed 75 relative to the longitudinal axis of its exit 19. It is preferable that the angular relation between the longitudinal axes be approximately 45 degrees.

A tapered guide recess 20 is provided in the inner surface of the extension 16 and communicates with the entrance 18. A recess 21 is provided on the outer surface of the extension 16 and communicates with the exit 19. 80. 85

A lateral projection 22 is formed at the free end of the arm 8 and terminates in an oval-shaped button 23 having tapered sides 24.

In using this novel device to clamp 90

an umbilical cord, such as the cord 25 as is illustrated in figure 4, the surgeon should, with the clamp in an open position, locate the cord so that it is positioned between the arms 8 and 9 and as near the hinge portion 10 as is practical. With the clamp in one hand the surgeon may then exert pressure by depressing the thumb depressor surfaces 12 and 13. This can best be accomplished by using the thumb and forefinger. The arms 8 and 9 are thereby moved into a closed position and the teeth 14 and 16 function to prevent any slippage between the cord and the arms 8 and 9.

The compression exerted by the hand of the operator as above mentioned is sufficient to interlock the free ends of the arms 8 and 9. Since the oval-shaped button 23 is in substantial registration relative to the entrance 18 of the oval-shaped hole 17, it may freely enter the entrance 18 thereof and traverse the thickness of the flattened extension 16, finally emerging through the exit 19. In passing through the hole 17, the button 23 is caused to be rotated approximately 45 degrees due to the spiral configuration therein. Being that the exit 19 of the hole 17 is disposed so that its longitudinal axis is angularly related to the longitudinal axis of the entrance 18, the button 23 is locked in position and is prevented from returning back through the hole 17. It should be obvious, of course, that the physical characteristics of the material forming the lateral projection 22 cause the latter to counter-rotate so that the button 23 resumes its normal position in substantial registration with the entrance 18. The size of the button 23 is preferably slightly smaller than the size of the hole 17. Furthermore, it should be noted that the tapered sides 24 of the button 23 function to facilitate the passage of the button 23 through the hole 17. The tapered recess 20 obviously functions to guide the passage of the button 23 towards the entrance 18 of the hole 17. When the clamp is in its closed position, as can be best seen in figure 4, the button 23 is accommodated within the recess 21 so that a substantially flush relationship exists between the surface of the button 23 and the outer surface of the extension 16.

The compression of the cord 25 is sufficient so as to produce hemostasis as is well-known to those skilled in the art. Due to the flexible and somewhat elastic properties of the material from which the clamp, as a whole and

particularly the arms 8 and 9, is fabricated, it has the characteristic of being automatically compensating for any shrinkage in the cord 25. Thus, when the umbilical cord is clamped in position, the arms 8 and 9 become slightly bent under flexion because of the physical size of the cord clamped therein. Therefore, as the cord diminishes in diameter, the arms 8 and 9 move closer together in a state of flexion and continue to maintain the required pressure on the cord 25. After the clamp has been in position on the cord for a predetermined period of time it may be easily removed by severing the projection 22 adjacent to the button 23, or by cutting through the substance of the hinge 10.

The funis clamp described herein has been found extremely satisfactory when fabricated of synthetic plastic, having the physical characteristics of being relatively flexible, elastic, and of sufficient strength. The fabricated plastic clamp may be produced by mass production techniques at an extremely low cost and, therefore, may be marketed as an inexpensive disposable item.

Thus, a funis clamp has been provided which can be applied by the surgeon quickly with one hand and without the necessity of utilizing other tools, such as a forceps. Furthermore, the operator does not require assistance from anyone else in its application. Since the device is a unitary piece it may be sterilized very simply. It should be noted that the interlock mechanism incorporated in the device precludes the possibility of the arms 8 and 9 being accidentally disengaged, thereby releasing the pressure prematurely.

Although the funis clamp constituting this invention has been described herein in reference to its use as a means for clamping an umbilical cord, its scope and application is sufficiently diversified to include the clamping of other organs which may require a positive action clamping device.

#### WHAT WE CLAIM IS:-

1. A funis clamp for surgical use constituted by a pair of arms joined together at one of their ends and fabricated of a synthetic plastic, an oval-shaped button carried by the free end of one arm of said member, the free end of the other arm of said member having an aperture of oval form extending therethrough in a helical configuration for the reception therein of said button, said

aperture having an entrance in substantial registry with said button when the device is in an open position, the longitudinal axis of the aperture at 5 the entrance to said aperture being angularly disposed to the longitudinal axis of the aperture at the exit from said aperture.

2. The improved funis clamp substantially as herein described with 10

reference to the accompanying drawings.

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## COMPLETE SPECIFICATION

This drawing is a reproduction of the Original on a reduced scale.

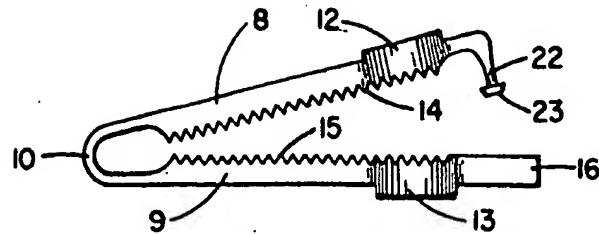


Fig. 1

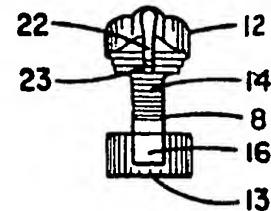


Fig. 3

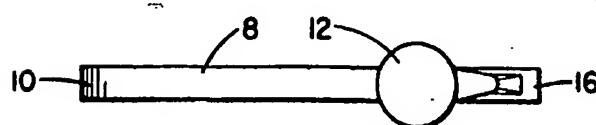


Fig. 2

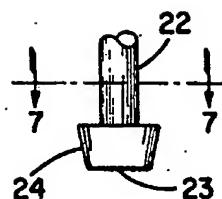


Fig. 6

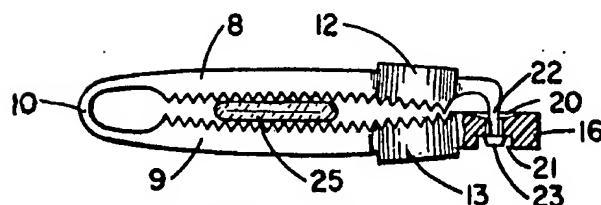


Fig. 4



Fig. 7

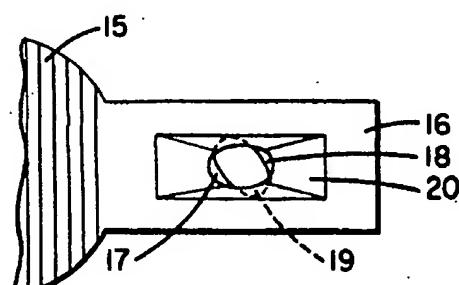


Fig. 5